

Amendments to the Claims

The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Currently Amended) A method for generating stimuli by an auditory prosthesis, including an array of stimulation ~~devices-electrodes~~, in response to an incoming acoustic signal, the method including:

dividing the incoming acoustic signal to obtain a plurality of filter band signals, each filter band corresponding to a ~~determining~~ stimulation ~~devices-electrode~~ to be activated within the array and ~~determining~~ activation times for those stimulation ~~devices-electrodes~~ using a base stimulation strategy; and ~~deriving temporal adjustments for each stimulation electrode using a latency function, wherein for a particular stimulation electrode, the latency function depends on filter band signal amplitudes of a plurality of surrounding filter bands, and filter band frequencies of the plurality of surrounding filter bands, relative to the filter band frequency of the particular stimulation electrode;~~

applying [the][a] temporal adjustment[s] to the activation times of the stimulation electrodes[s], said temporal adjustment being derived from the amplitudes of a plurality of stimuli to be applied by proximate stimulation devices, such that activation of stimulation devices ~~electrodes representing corresponding to lower-amplitude components filter band signals of the signal is are~~ delayed relative to activation of a proximate device representing stimulation electrodes corresponding to [a] higher-amplitude component ~~filter band signals of the signal;~~

and

generating a stimulus using one or more of the stimulation ~~devices-electrodes~~.

2. (Original) A method according to claim 1, wherein the auditory prosthesis is implantable in a cochlea and forms a linear array.

3. (Currently Amended) A method according to claim 1, wherein the auditory prosthesis stimulation ~~device-electrode~~ array is implantable in an auditory brain and forms a grid mapped to the form of a linear array.

4. (Canceled)

5. (Currently Amended) A method according to claim 1, wherein the ~~activation time of each stimulation device is temporally adjusted according to a latency function whereby, for a particular device stimulation electrode includes, a temporal adjustment is applied if a weighted sum of the amplitudes of a plurality of surrounding filter band signal amplitudes and a temporal adjustment is made if said weighted sum proximate stimuli exceeds the an amplitude of the stimuli to be applied by the particular device stimulation electrode.~~

6. (Canceled)

7. (Currently Amended) A method according to claim 5, wherein the latency function $f_x(\vec{x})$ is defined by:

$$f_x(\vec{x}) = \min(0, -2aA_x + a \sum_{\substack{y=1 \\ y \neq x}}^N g(y)A_y)$$

where A_x is the amplitude of a stimulation to be applied by a ~~device stimulation electrode~~ x , a is a scaling factor, N is the number of ~~devices surrounding filter bands~~ to which the latency function is constrained, and $g(y)$ is ~~amplitude of a stimuli~~ a weighting factor to be applied to the amplitude of stimulation to be applied by stimulation electrode A_y by device y .

8. (Currently Amended) A method according to claim 1, wherein the stimulation ~~device electrode array~~ of the auditory prostheses requires non-simultaneous stimulation to be applied by the array of stimulation ~~devices electrodes~~, the method further including:

if there is temporal contention between stimulation to be applied by different ~~devices electrodes~~ of the array, discarding one or more lower-amplitude stimuli in ~~favour~~ favor of a higher-amplitude stimulus.

9. (Currently Amended) A method according to claim 1, wherein the auditory prostheses requires non-simultaneous stimulation to be applied by the array of stimulation ~~devices electrodes~~, the method further including:

if there is temporal contention between stimulation to be applied by different ~~devices~~ stimulation electrodes of the array, applying a further temporal delay to one or more lower-amplitude stimuli by one or more stimulation slots in ~~favour~~ favor of a higher-amplitude stimulus.

10. (Canceled).

11. (Currently Amended) A method according to claim 1, wherein the ~~array of stimulation devices~~ auditory prosthesis includes one or more drug delivery units for delivering drugs to a user at predetermined locations.

12. (Original) A method according to claim 11, wherein the drug delivery units are fluidic microchannels.

13. (Currently Amended) A system for generating stimuli in response to an incoming acoustic signal for application[s] by an auditory prosthesis including an array of stimulation ~~devices~~ electrodes, including:

a stimulator unit for selectively activating stimulation ~~devices~~ electrodes in the array; and
a processor for processing received sound signals and controlling the operation of the stimulator unit using a method including:

dividing the incoming acoustic signal to obtain a plurality of filter band signals, each filter band corresponding to a ~~determining~~ stimulation devices ~~electrodes~~ to be activated within the array and; determining activation times for those stimulation devices ~~electrodes~~ using a base stimulation strategy; and deriving temporal adjustments for each stimulation electrode using a latency function, wherein for a particular stimulation electrode, the latency function depends on: filter band signal amplitudes of a plurality of surrounding filter bands and filter band frequencies of the plurality of surrounding filter bands, relative to the filter band frequency of the particular stimulation electrode;

applying [the] [a] temporal adjustment[s] to the activation times of the stimulation electrodes, said temporal adjustment being derived from the amplitudes of a plurality of stimuli to be applied by proximate stimulation devices, such that activation of stimulation devices ~~electrodes~~ representing corresponding to lower-amplitude components ~~filter band signals of the signal is~~ are delayed relative to activation of a proximate device representing stimulation electrodes corresponding to [a] higher-amplitude component ~~filter band signals of the signal.~~

14-15. (Canceled)

16. (Currently Amended) A processor for use in a system for generating stimuli in response to an incoming acoustic signal for application by an auditory prosthesis including an array of stimulation ~~devices-electrodes~~, the system including a stimulator unit for selectively activating stimulation ~~devices-electrodes~~ in the stimulation ~~device-electrode~~ array, the processor including digital signal processing means for processing received sound signals and controlling the operation of the stimulator unit using a method including:

dividing the incoming acoustic signal to obtain a plurality of filter band signals, each filter band corresponding to a ~~determining-stimulation devices-electrodes~~ to be activated within the array and; determining activation times for those stimulation ~~devices electrodes~~ using a base stimulation strategy; and deriving temporal adjustments for each stimulation electrode using a latency function, wherein for a particular stimulation electrode, the latency function depends on: filter band signal amplitudes of a plurality of surrounding filter bands and filter band frequencies of the plurality of surrounding filter bands, relative to the filter band frequency of the particular stimulation electrode;

applying [the] [a] temporal adjustment[s] to the activation times of the stimulation electrodes, said temporal adjustment being derived from the amplitudes of a plurality of stimuli to be applied by proximate stimulation devices, such that activation of stimulation ~~devices electrodes~~ representing corresponding to lower-amplitude components filter band signals of the signal is ~~are~~ delayed relative to activation of a ~~proximate device representing~~ stimulation electrodes corresponding to [a] higher-amplitude component filter band signals of the signal.

17. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13 wherein the ~~activation time of each stimulation device is temporally adjusted according to a latency function whereby,~~ for a particular stimulation electrode device includes, ~~a temporal adjustment is applied if the [a] weighted sum of the amplitudes of a plurality of surrounding filter bands and a temporal adjustment is made if said weighted sum proximate stimuli exceeds the weighted amplitude of the stimuli to be applied by the particular device-stimulation electrode.~~

18. (Canceled)

19. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 17, wherein the latency function $f_x(\vec{x})$ is defined by:

$$f_x(\vec{x}) = \min(0, -2aA_x + a \sum_{\substack{y=1 \\ y \neq x}}^N g(y)A_y)$$

where A_x is the amplitude of a stimulation to be applied by a ~~device-stimulation electrode~~ stimulation electrode x , a is a scaling factor, N is the number of ~~devices-surrounding filter bands~~ surrounding filter bands to which the latency function is constrained, and $g(y)$ is ~~amplitude of a stimuli~~ a weighting factor to be applied to the amplitude of electrode A_y by device y .

20. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13, wherein the stimulation ~~device-electrode~~ electrode array of the auditory prosthesis requires non-simultaneous stimulation to be applied by the array of stimulation ~~devices-electrodes~~ electrodes, and wherein the processor is further configured to discard one or more lower-amplitude stimuli in ~~favour-favor~~ favor of a higher-amplitude stimulus, in the event that there is temporal contention between stimulation to be applied by different ~~devices-electrodes~~ electrodes of the array.

21. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13, wherein the auditory prosthesis requires non-simultaneous stimulation to be applied by the array of stimulation ~~devices-electrodes~~ electrodes, and the processor is further configured to apply a further temporal delay to one or more lower-amplitude stimuli by one or more stimulation slots in ~~favour-favor~~ favor of a higher-amplitude stimulus, in the event that there is temporal contention between stimulation to be applied by different ~~device-stimulation electrode~~ stimulation electrode of the array.

22. (Canceled).

23. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13 wherein the array of stimulation ~~devices~~electrodes includes one or more drug delivery units for the delivery of drugs to a user at predetermined locations.

24. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13 wherein the auditory prosthesis is implantable in a cochlea and forms a linear array.

25. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13 wherein the auditory prosthesis stimulation ~~device~~electrode array is implantable in an auditory brain and forms a grid mapped to the form of a linear array.

26. (Currently Amended) A system for generating stimuli for application[s] by an auditory prosthesis as claimed in claim 13 wherein the processor is further configured to apply the temporal adjustment to the activation time of stimulation ~~device~~electrode derived from the amplitudes of stimuli to be applied by proximate stimulation ~~devices~~electrodes.

27. (Canceled).

28. (Currently Amended) A processor for use in a system for generating stimuli for application by an auditory prosthesis as claimed in claim 16, wherein the processor is further configured to discard one or more lower-amplitude stimuli in ~~favour~~favor of a higher-amplitude stimulus, in the event that there is temporal contention between stimulation to be applied by different ~~device~~stimulation electrode of the array.

29. (Currently Amended) A processor for use in a system for generating stimuli for application by an auditory prosthesis as claimed in claim 16, wherein the processor is further configured to apply a further temporal delay to one or more lower-amplitude stimuli by one or more stimulation slots in ~~favour~~favor of a higher-amplitude stimulus, in the event that there is temporal contention between stimulation to be applied by different ~~device~~stimulation electrode of the array.

30. (Currently Amended) A system for generating stimuli for applications by an auditory prosthesis as claimed in claim ~~[22]~~[13], wherein the stimulator unit acts to activate the one or more electrodes by selectively applying stimulation pulses to the electrodes.

31. (Previously Presented) A system according to claim 23 wherein the stimulator unit includes a drug storage device and a drug delivery pump for delivering drugs stored in the drug storage device through the drug delivery units to a user.